

**IN THE SPECIFICATION:**

Please replace paragraph [0036] with the following amended paragraph:

[0036] An annular pumping channel 609 is positioned about the perimeter of the chamber body 601 proximate the edge of substrate support member 604. Pumping channel 609 is in communication with a pumping device 614, such as a vacuum pump, for example. The structural configuration of pumping channel 609, in conjunction with the central location of substrate support member 604, operates to generate a gas flow that radiates outward from the center of substrate support member 604. An air knife assembly 611 ~~604~~ configured to generate a confined high pressure laminar-type stream of gas that may be directed proximate the surface of substrate 605 in a direction that is generally parallel to the surface of the substrate is positioned proximate the perimeter of substrate support member 604. Therefore, once actuator 610 has generated a broadband impulse sufficient to dislodge the particles from the substrate surface, air knife 611 ~~604~~ may be used to sweep the particles away from the substrate surface and into pumping channel 609 for removal from chamber 600.

Please replace paragraph [0037] with the following amended paragraph:

[0037] In operation, chamber 600 operates to remove particles from a substrate using mechanical forces. The substrate having particles thereon 605 is positioned on substrate support member 604 by a robot (not shown). The substrate 605 is then vacuum chucked to the substrate support member 604 via opening of valve 609, which operates to bring aperture 613 into fluid communication with vacuum chamber 608. Vacuum chamber 608, which is formed by the inner walls of hemispherical support member 602 and the lower surface 616 of substrate support member 604, is in communication with a vacuum source (not shown) via conduit 626. Once substrate 605 is vacuum chucked to substrate support member 604, actuator 610 may be activated, which operates to generate a broadband impulse. The impulse is transmitted through hemispherical reinforcement member 602 into substrate support member 604 and then

to substrate 605. This impulse causes the contamination particles on the substrate surface to be dislodged therefrom. Once the particles are dislodged, air knife 611 ~~604~~ may be used to flow a laminar stream of high pressure air across the substrate surface, which operates to sweep the dislodged particles away from the substrate surface, thus preventing the particles from re-depositing thereon. The particles may then be removed from chamber 600 via pumping channel 609.

Please replace paragraph [0040] with the following amended paragraph:

[0040] Figure 4 illustrates a sectional view of an alternative embodiment of a substrate cleaning chamber 400 of the invention. Figure 5 illustrates a partial perspective view of the exemplary particle cleaning chamber 400 shown in Figure 4. Chamber 400 includes a chamber body 401 and a lid 402 that cooperatively define a processing cavity 403 therebetween. A substrate support member 404 is centrally disposed within processing cavity 403 of chamber body 401, and is configured to support a substrate 405 on an upper surface 406 thereof. Substrate support 404 may be manufactured from aluminum, stainless steel, carbon steel, ceramic materials, titanium, and/or other materials used to manufacture substrate support members in the semiconductor art. Additionally, support member 404 may be coated with a non-reactive coating, such as polyimide or titanium-nitride, for example. Substrate support member 404 is axially supported by a shaft 420 extending through the bottom portion of chamber body 401 to the exterior. Upper surface 406 of substrate support member 404 includes a plurality of vacuum apertures 413 formed therein, where each of apertures 413 are in fluid communication with a vacuum source (not shown). Substrate 405 is supported on substrate support member 404 through, for example, a vacuum chucking process, where a vacuum is applied to the plurality of vacuum apertures 413 in order to secure a substrate thereto. In alternative embodiments, mechanical chucking and/or clamping processes may be implemented individually or cooperatively with a vacuum chucking process to secure a substrate to substrate support member 404. Substrate support member 404 includes an actuator 410 positioned in a shaft portion of substrate support member 404. Actuator 410 is configured to generate and transfer a broadband impulse force to substrate support member 404. The broadband impulse force is generally

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Atty. Dkt. No. AMAT/5970.02/CPES/CORE/JB1

directed upward along the axis of the shaft supporting substrate support member 404 in a direction perpendicular to the surface of substrate 405. Since broadband impulses are used, substrate support member 404 may include one or more structural reinforcement members that may be used to strengthen the substrate support member 404 so that the impulse generated by actuator 410 does not deflect substrate support member 404. The reinforcement members may be manufactured into the table portion of substrate support member 404 and may be configured to transfer the broadband impulse generated by actuator 410 to the upper surface 406 with minimal deflection of substrate support member 404. Known structural reinforcement patterns, such as triangular and honeycomb-type patterns may be implemented into reinforcing substrate support member 404. Additionally, a support member, such as a hemispherical support member, for example, may be implemented between substrate support member 404 and shaft 420 in order to better transfer the impulse from shaft 420 to substrate support member 404.